

2.7 CONICAL BURNERS

The information presented in this section has not been updated since it was originally prepared because no recent data were found. The use of conical burners is much less prevalent now than in the past and they are essentially obsolete.

2.7.1 Process Description¹

Conical burners are generally truncated metal cones with screened top vents. The charge is placed on a raised grate by either conveyor or bulldozer; however, the use of a conveyor results in more efficient burning. No supplemental fuel is used, but combustion air is often supplemented by underfire air blown into the chamber below the grate and by overfire air introduced through peripheral openings in the shell.

2.7.2 Emissions and Controls

The quantities and types of pollutants released from conical burners are dependent on the composition and moisture content of the charged material, control of combustion air, type of charging system used, and the condition in which the incinerator is maintained. The most critical of these factors seems to be the level of maintenance on the incinerators. It is not uncommon for conical burners to have missing doors and numerous holes in the shell, resulting in excessive combustion air, low temperatures, and, therefore, high emission rates of combustible pollutants.²

Particulate control systems have been adapted to conical burners with some success. These control systems include water curtains (wet caps) and water scrubbers. Emission factors for conical burners are shown in Table 2.7-1.

TABLE 2.7-1. EMISSION FACTORS FOR WASTE INCINERATION IN CONICAL BURNERS WITHOUT CONTROLS^a
EMISSION FACTOR RATING: D

Type of Waste	Particulates		Sulfur Oxides		Carbon Monoxide		NMOC		Nitrogen Oxides	
	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg
Municipal refuse ^b	20 (10 to 60) ^{c,d}	10	2	1	60	30	20	10	5	2.5
Wood refuse ^e	1 ^f	0.5	0.1	0.05	130	65	11	5.5	1	0.5
	7 ^g 20 ^h	3.5 10								

^a Moisture content as fired is approximately 50 percent for wood waste.

^b Except for particulates, factors are based on comparison with other waste disposal practices.

^c Use high side of range for intermittent operations charged with a bulldozer.

^d Based on Reference 3.

^e References 4 through 9.

^f Satisfactory operation: properly maintained burner with adjustable underfire air supply and adjustable, tangential overfire air inlets, approximately 500 percent excess air and 370 °C (700 °F) exit gas temperature.

^g Unsatisfactory operation: properly maintained burner with radial overfire air supply near bottom of shell, approximately 1200 percent excess air and 204 °C (400 °F) exit gas temperature.

^h Very unsatisfactory operation: improperly maintained burner with radial overfire air supply near bottom of shell and many gaping holes in shell, approximately 1500 percent excess air and 204 °C (400 °F) exit gas temperature.

References for Section 2.7

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